ABSTRACT

An image decoder performs a 2-D transform as a series of 1-D transforms, and does so in a more efficient manner than prior decoders. The decoder includes a memory and a processor coupled to the memory. The processor is operable to store a column of values in the memory as a row of values, combine the values within the

5   stored row to generate a column of resulting values, and store the resulting values in the memory as a row of resulting values. Such an image decoder can store values in a memory register such that when the processor combines these values to generate intermediate IDCT values, it stores these intermediate IDCT values in a transposed fashion. Thus, such an image decoder reduces the image-processing

10   time by combining the generating and transposing of the intermediate IDCT values into a single step. The image decoder can store the values in a memory register such that when the processor combines these values to generate the intermediate IDCT values, it stores these intermediate IDCT values in a transposed and even-odd-separated fashion. Thus, such an image decoder reduces the image-

15   processing time by combining the generating, transposing, and even-odd separating of the intermediate IDCT values into a single step.